

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
18 August 2005 (18.08.2005)

PCT

(10) International Publication Number  
**WO 2005/075142 A1**

- (51) International Patent Classification<sup>7</sup>: **B23P 5/00**
- (21) International Application Number:  
PCT/KR2005/000334
- (22) International Filing Date: 4 February 2005 (04.02.2005)
- (25) Filing Language: Korean
- (26) Publication Language: English
- (30) Priority Data:  
10-2004-0008418 9 February 2004 (09.02.2004) KR
- (71) Applicant (for all designated States except US): **SHIN-HAN DIAMOND INDUSTRIAL CO., LTD.** [KR/KR]; 36B-10L, Namdong Industrial Estate, 610-9, Namchon-Dong, Namdong-Gu, Incheon 405-100 (KR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **SONG, Min Seok** [KR/KR]; 25/3, 1405, Guwol 3-Dong, Namdong-Gu, Incheon 405-840 (KR). **PARK, Mun Seok**

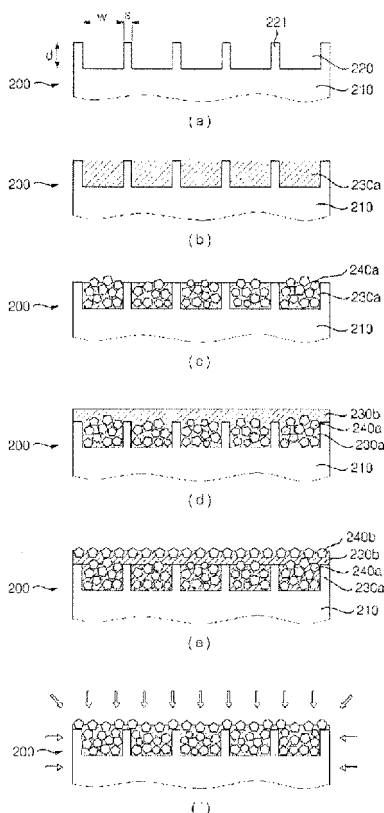
[KR/KR]; 102-305, Punglim 1st Apt., Namchon-Dong, Namdong-Gu, Incheon 405-735 (KR). **KIM, Sug Goo** [KR/KR]; A-203, Yuhan-Billa, 440-4, Yonghyeon 3-Dong, Nam-Gu, Incheon 402-830 (KR). **LEE, Sun Jai** [KR/KR]; 203-1308, Hyundai Apt., 633, Ongnyeon-Dong, Yeonsu-Gu, Incheon 406-772 (KR). **KIM, Kang Jun** [KR/KR]; 10-1106, Jinju Apt., Gajwa2-Dong, Seo-Gu, Incheon 404-250 (KR). **CHEONG, Kee Jeong** [KR/KR]; 1017-1405, Sinsigaji Apt., 311, Sinjeong-Dong, Yangcheon-Gu, Seoul 158-070 (KR). **JEE, Won Ho** [KR/KR]; 311-805, Kyunghyang Apt., Tapmaul, Yatap-Dong, Bundang-Gu, Seongnam 463-924 (KR). **KIM, Shin Kyung** [KR/KR]; 81-1406, Hanyang Apt., 510 Apgujeong-Dong, Gangnam-Gu, Seoul 135-110 (KR).

(74) Agent: **NAM, Seung-Hee**; 12F, Seo-Jeon Bldg., 1330-9, Seocho-Dong, Seocho-Gu, Seoul 137-070 (KR).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

[Continued on next page]

(54) Title: **DIAMOND TOOLS WITH MULTILAYERS OF ABRASIVE GRAIN AND METHOD FOR MANUFACTURING THE SAME**



(57) Abstract: The present invention relates to a diamond tool and a method of manufacturing the same, wherein multiple abrasive layers are formed through a brazing or electroplating method, thereby improving the performance and service life of the tool. According to the method of the present invention, a plurality of concave portions are formed in a surface of the shank. A bonding paste is coated into the concave portions and abrasives are dispersed in the bonding paste to thereby form a lower abrasive layer. Again, a bonding material is coated on the lower abrasive layer and abrasives are dispersed in the bonding material to thereby form an upper abrasive layer. Then, a heat treatment is executed to fusion-bond the bonding material and abrasives onto the surface of the shank. Therefore, the diamond tools manufactured through a multiple brazing or electroplating method according to the invention can significantly extend the service life thereof, which has been a detrimental weakness of the conventional diamond tools having a single abrasive layer, in spite of various advantages of the brazing and electroplating methods. Furthermore, multiple abrasive layers can be formed inside the concave portions having a desired spacing, width and depth, thereby significantly improving the service life and the cutting performance of diamond tools.



AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.